

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

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FEDERAL COMMUNICATIONS COMMISSION
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In the Matter of

Allocation of Spectrum

below 5 GHz Transferred

from Federal Government Use

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ET Docket No. 94-32

LORAL/QUALCOMM PARTNERSHIP, L.P.

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EXECUTIVE SUMMARY

The Commission has proposed allocations for 50 megahertz of spectrum identified by the Department of Commerce for transfer from Federal Government to private sector usage. The Commission proposes that the bands 2390-2400 MHz, 2402-2417 MHz and 4660-4685 MHz be allocated for general Fixed and Mobile services. LQP urges the Commission instead to allocate this spectrum for user and feeder links for non-geostationary mobile satellite services.

LQP believes that such allocations are needed to accommodate the service requirements which will result once the MSS applicants begin providing needed mobile communications services within the U.S. and around the world. The frequencies made available by such a reallocation of spectrum are needed to meet expected high levels of market demand, particularly for second generation mobile satellite systems.

LQP proposes that the 2390-2400 MHz be allocated for MSS in the Earth-to-space direction, and the 2403-2417 MHz band be allocated for MSS in the space-to-Earth direction. The 4660-4685 MHz band should be allocated to the FSS in both the space-to-Earth and the Earth-to-space direction with FSS use in the Earth-to-space direction designated for use by MSS feeder links. In addition, the 2300-2310 MHz band should also be allocated for MSS, in either the space-to-Earth or Earth-to-space directions or both.

Finally, LQP believes that spectrum allocated for mobile satellite service should not be made available pursuant to competitive bidding, as it may result in imposing excess costs on U.S. licensees, with detrimental effect on the service operators and ultimately, the U.S. consumer.

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COMMENTS OF LORAL/QUALCOMM PARTNERSHIP, L.P.

Loral/QUALCOMM Partnership, L.P., ("LQP") hereby respectfully submits its comments in the above-captioned proceeding.¹ The Commission, in its Notice of Proposed Rulemaking, ("Notice"), proposes allocations for 50 megahertz of spectrum identified by the Department of Commerce for transfer from Federal Government to private sector usage. The Commission proposes that the band 2390-2400 MHz, 2402-2417 MHz and 4660-4685 MHz be allocated for general Fixed and Mobile services, rather than specifying these bands for particular uses.² The Commission states that "such a flexible allocation that relies substantially on market forces may be appropriate" and proposes that licenses for this spectrum be made available through competitive bidding.³

As discussed below, LQP urges the Commission instead to allocate this spectrum for user and feeder links for non-geostationary mobile satellite service ("MSS"). Such allocations would enable non-GSO MSS systems to address the enormous forecast demand for handheld communications service to be provided by MSS, enhancing telecommunications service within the United States as well as

¹ See Notice of Proposed Rulemaking, FCC 94-172, released November 8, 1994 ("50 MHz NPRM").

² Notice, at para. 9.

³ Id.

globally, and making available telecommunications in many locations where none is now available. LQP is an applicant for authority to provide non-geostationary MSS in the 1610-1626.5 MHz and 2483.5-2500 MHz band, and as such, has a significant interest in the allocation of spectrum below 5 GHz.

I. The Commission Should Allocate All The Bands Made Available by the U.S. Government for Use by Mobile Satellite Service (MSS)

LQP urges the Commission to allocate all of the initial 50 MHz made available by the National Telecommunications and Information Administration for use by MSS, specified for use by non-geostationary systems. The availability of additional spectrum for non-GSO MSS systems will enable these systems to fulfill their promise "to stimulate economic growth both in the United States and abroad. A potential multi-billion dollar industry will be enabled, creating opportunities for economic growth in a variety of markets and sub-markets."⁴

LQP, along with five other Big LEO applicants, are seeking licenses to provide voice, data and position location service directly from satellites to individual consumer handsets. These first generation systems propose to use the 1610-1626.5 MHz and 2483.5-2500 MHz bands for user links; however, the limited amount of spectrum available will restrict the total market which can be served. These non-geostationary MSS systems, such as LQP's Globalstar, will provide communications in many locations where none is now available, provide additional communications in sparsely served areas, and enable both U.S. citizens and others to enjoy the benefits of ubiquitous, convenient communications capability wherever they may be. The availability of such communications capability will enhance the security of and facilitate the conduct of business by American business people everywhere.

⁴ See Address of FCC Chairman Reed E. Hundt, to the World Telecommunication Development Conference, Buenos Aires, Argentina (Mar. 21-22, 1994).

An allocation for non-GSO MSS would be a significant step towards the Commission's "major goal" in preparations for the 1995 World Radiocommunication Conference (WRC-95) "to facilitate the introduction of worldwide MSS."⁵

II. The Commission Should Allocate the 2390-2400 MHz Band for Non-GSO MSS in the Earth-to-Space Direction

The 2390-2400 MHz band should be allocated for non-GSO MSS in the Earth-to-space direction and the 2402-2417 MHz band should be allocated for non-GSO MSS in the Space-to-Earth direction to provide additional capacity for first and second generation MSS systems.⁶ The spectrum now available for such systems is proposed to be shared by up to five systems.⁷ While such spectrum sharing will enable prompt action on the pending applications for non-GSO MSS systems, it will limit the capacity of each system. The addition of user link spectrum, in the 2390-2400 MHz and 2402-2417 MHz bands would enable these systems to provide more service to more users over the next decade. In addition, such spectrum could be incorporated into the second generation non-GSO MSS systems, thereby expanding the capacity of those systems. A U.S. domestic allocation of the 2390-2400 MHz and 2402-2417 MHz bands for non-GSO MSS also will pave the way for U.S. proposals for

⁵ See Notice of Inquiry, In the Matter of Preparation for International Telecommunication Union World Radiocommunication Conferences, IC Docket No. 94-31, FCC 94-96, released May 5, 1994, at para. 19.

⁶ In addition to the 2402-2417 MHz band, the Commission also should consider allocating the 2300-2310 MHz band for use by non-GSO MSS systems, in either the space-to-Earth or Earth-to-space direction, or both. See, LQP Reply Comments filed June 30, 1994 in the Notice of Inquiry in ET Docket No. 94-32.

⁷See Report and Order, FCC 94-261 (Released October 14, 1994) ("Big LEO Rules Order") at para 10 .

international allocation of these bands for non-GSO MSS.⁸

LQP proposes that the bands 2390-2400 MHz band be allocated for non-GSO MSS in the Earth-to-space direction. Additional user spectrum in the Earth-to-space direction for non-GSO MSS systems is especially critical in light of the Commission's plan to divide the 1610-1626.5 MHz band between the CDMA/TDMA system and multiple CDMA systems.⁹ The CDMA systems face other constraints on use of the lower portion of the 1610-1626.5 MHz band, such as the need to protect radioastronomy operations, GPS and possibly GLONASS receivers.¹⁰

III. The Commission Should Allocate the 2402-2417 MHz Band for Non-GSO MSS in the Space-to-Earth Direction

The Commission should allocate the 2402-2417 MHz band for non-GSO MSS in the space-to-Earth direction.¹¹ As with the 2390-2400 MHz band, this spectrum could provide needed additional capacity in first generation non-GSO MSS systems. LQP believes that ISM and Part 15 use would have insignificant impact on non-GSO MSS downlinks in this band.¹² Moreover, at a recent international ITU Radiocommunication Sector meeting on sharing between services, Task Group 2/2,

⁸See, Notice of Inquiry, IC Docket No. 94-31 (Released May 5, 1994) and FCC Public Notice announcing the establishment of Industry Advisory Committee for WRC-95 and notice of first meeting, released May 25, 1995.

⁹ See, Big LEO Rules and Order at para. 44.

¹⁰See Big LEO Rules NPRM, 9 FCC Rcd 536 at 1122-24; LQP Comments on Big LEO Rules NPRM, at pp. 62-72, and Technical Appendix at Sections 2.1-2.2.

¹¹ Previously, LQP proposed that this band be allocated for non-GSO MSS in the space-to-Earth direction. However, LQP is pursuing identification of other suitable bands for non-GSO MSS uplinks and believes that the 2390-2400 MHz band, in view of the requirements of radioastronomy, would be more suitable as an MSS downlink.

¹² See LQP Comments, supra note 12.

a Draft New Recommendation was adopted which stated that bands in which ISM systems operate are "unattractive in many countries for digital radio-relay systems."¹³ This Draft New Recommendation provides criteria to be used as coordination threshold values for coordination between non-GSO MSS (space-to-Earth) and fixed service systems in a number of bands below 3 GHz and specifies power flux density values to protect analog fixed service systems and FDP (fractional degradation of performance) values to protect digital systems. Thus, substantial study has been completed which validates the ability of non-GSO MSS systems operating in the space-to-Earth direction to share with terrestrial fixed systems.

The methodology developed for coordinating non-GSO MSS systems with terrestrial fixed could readily be adapted to the 2402-2417 MHz band, facilitating its use by both services. In the case of a system like Globalstar, demonstration has already been made of its ability to operate within PFD limits which will protect terrestrial fixed service.¹⁴

IV. The Commission Should Allocate the 4660-4685 MHz Band for Non-GSO MSS Feederlinks in the Earth-to-Space Direction

LQP urges the Commission to allocate the 4660-4685 MHz band for non-GSO MSS feeder links in the Earth-to-space direction. As the Commission itself has noted, the identification of suitable feeder link spectrum below 16 GHz for non-GSO MSS systems, is exceedingly difficult. However, in the Big LEO Report and Order the Commission expressed the view that it would seek to accommodate the requirements of the non-GSO MSS applicants for feeder links in the portions of the spectrum in

¹³See, "Sharing in the Frequency Bands in the 1-3 GHz Frequency Range Between the Non-Geostationary Space Stations Operating in the Mobile-Satellite Service and the Fixed Service," Document 2-2/TEMP/89 (Rev.1), December 8, 1994.

¹⁴ See, Document 2-2/TEMP/89 (Rev. 1), December 8, 1994.

which they propose to operate.¹⁵

With regard to the use of the 4660-4685 MHz band for non-GSO MSS feeder links in the Earth-to-space direction, LQP believes that this band would be a useful adjunct to spectrum in the 5 GHz band which may become available for MSS feeder links. At the recent ITU-R Working Party 4 A and Task Group 4/5 meetings, papers were submitted demonstrating the utility of using the FSS Allotment Bands, including the 4500-4800 MHz band, for non-GSO MSS Feeder links, in the reverse direction from the fixed-satellite service allocations.¹⁶ Based on these inputs ITU-R Task Group 4/5 concluded that "sharing of non-GSO/MSS feeder links in RBW mode in the C and Ku band FSS allocations has been found to be feasible."¹⁷ The TG 4/5 Report noted that "(I)f the bands corresponding to the FSS Allotment Plans are considered by WRC-95 for a new allocation to non-GSO/MSS feeder links, protection of the plan would need to be ensured by specific provisions."¹⁸ Such an allocation and suitable regulatory provisions should be included in U.S. proposals to WRC-95.

V. Non-GSO MSS Systems Require Substantial Additional Amounts of Spectrum to Meet Service Demand

The Commission, in deciding how to allocate the initial 50 MHz of spectrum made available by the Federal Government, must give substantial weight to the requirements of services, particularly new services, such as MSS, for spectrum. The demand for handheld service from non-GSO MSS is expected to be considerable, growing from a base of around 3 to 4 million subscribers at the beginning of the 21st

¹⁵ Big LEO Rules RM, cited supra.

¹⁶ See, Document 4-5/102, November 15, 1994.

¹⁷ Document 4-5/SUM/ , cited supra.

¹⁸ Supra., at p. 17.

century, to between 8 to 13 million by 2005, and up to 22 to 37 million by 2010.¹⁹

Research undertaken by MSS operators, as well as independent analyses, have identified the following three main markets for MSS service: (1) cellular fill-in market consisting of those users who require mobile service in rural parts of the developed world and in areas of countries where terrestrial cellular coverage may be limited; (2) the international business traveler market consisting of professionals who travel to regions with incompatible or limited cellular or PSTN services; and (3) the semi-fixed user market consisting of users requiring services in urban and rural areas of countries which lack developed PSTN.²⁰

From the MSS subscriber projections, the total bandwidth requirements has been calculated. This approach is similar to that used in telecommunications traffic engineering and considers the peak traffic stream that must be supported. Using this methodology, MSS handheld voice service (from non-GSO satellites) will require the following amounts of spectrum in the year 2005:²¹

<u>Market Estimate</u>	<u>Subscribers Millions</u>	<u>Equivalent Spectrum Requirement (each direction) for Handheld Voice Personal Communications MSS</u>
Low	4.11	19.3 MHz
Low	6.0	28.1 MHz
Medium	15.0	70.2 MHz
High	22.0	103 MHz

¹⁹ IWG-3/11 (Rev.2), Submission to WRC-95 Industry Advisory Committee, December 13, 1994, at p. 2.

²⁰ Supra., at pp. 2-3.

²¹ Note: these estimates do not include spectrum requirements needed to meet "conventional" GSO MSS needs. Supra., at p. 4.

These projections indicate that substantial additional spectrum resources are needed for non-GSO MSS. The Commission can begin to address this requirement by allocating the 50 MHz made available from the federal government for non-GSO MSS user and feeder links.

The Commission already has allocated substantial amounts of spectrum for terrestrial mobile services.²² It is currently conducting licensing proceedings for the use of that spectrum and it will be a number of years before a determination can be made as to the benefits that will accrue from that service. Mobile service via satellite is a necessary adjunct to terrestrial mobile services; spectrum should be made available for MSS.

VI. The Commission Must Consider the Important Public Benefits Which Will Flow From Providing More Spectrum Allocations to MSS

The mobile satellite service industry is already a vigorous part of the U.S. economy. From a user base of a few hundred terminals in the late 1970s, the global commercial mobile satellite services market now totals more than 150,000 users. If users of the U.S. Department of Defense Global Positioning System are included, the total number of mobile satellite users would exceed 500,000.

The largest operator of mobile satellite services, in terms of numbers of users, is California-based QUALCOMM, which has more than 100,000 US users in its customer base. QUALCOMM has enjoyed steady growth in revenues and numbers of subscribers, and already has FCC authorization to provide service to up to 150,000 terminals.

Revenues from mobile satellite services are now poised for enormous growth. More than \$350 million in revenues from mobile satellite services was generated in the U.S. in 1993 alone, and one study projects that revenue growth for 1994 is likely

²²See, Second Report and Order ("PCS Allocation Order"). GEN Docket No. 90-314, 8 FCC Rcd 7700 (1994) at para. 25.

to exceed \$450 million.²³

For 1995, revenue growth should be even more robust, given the number of developments anticipated in the mobile satellite market. These include the further evolution of mobile satellite terminals into briefcase-size satellite telephones; the introduction of lower cost mobile satellite voice services by the U.S. domestic MSS provider in 1995; and implementation of the first low earth orbiting, data-only mobile satellite system.

A number of industry studies have been conducted to further quantify the positive impact to be expected from mobile satellite services. One study showed the beneficial impact on the U.S. economy resulting from the implementation of only one of the five proposed low earth orbiting mobile satellite systems would generate some \$5 billion in employment-creating activity, and most of it to be spent in the U.S..²⁴

The implementation of non-geostationary mobile satellite systems will stimulate the U.S. economy in a number of areas, including, in the satellite industry, design, development, production and operations; and launch vehicle services. For the ground segment, networks will need to be designed, operations centers developed, built and operated. Customer terminals, sales, service, distribution and billing will be required. Since 1982, U.S. companies received more than \$1 billion of Inmarsat procurement awards.²⁵

The vast majority of the effort involved in these activities would be performed on an on-going basis, as non-GSO satellites need to be replaced approximately every 5 to 10 years, networks reconfigured, new applications developed and terminals redesigned to meet changing service requirements. As the Commission pointed out,

²³ The Market for Mobile Satellite Services: Prospects for LEOs and GEOs, Leslie Taylor Associates, distributed by Phillips Business Information, Inc., 1994 at 241.

²⁴ "Inmarsat's Project 21 and US Policy," prepared for Iridium, Inc., Nathan Associates, June 5, 1992 at 28 - 29.

²⁵ Opposition of COMSAT Corp. to Petition for Declaratory Ruling, COMSAT Corp., December 8, 1993 at iv.

the Big LEO systems will "create a major global industry", generating demand for satellites, ground stations, customer terminals and sophisticated, value added telecommunications services.²⁶

VII. The Commission Should Consider Spectrum Sharing Alternatives to Competitive Bidding

The Commission, in proposing allocation of the 50 MHz of spectrum to be made available for commercial services, suggests that competitive bidding be used as the means of licensing systems.²⁷ While such an approach may be suitable for terrestrial services which are provided solely within U.S. borders, LQP believes that competitive bidding is not suitable for satellite allocations, particularly for global services.

Competitive bidding for licenses to provide global non-GSO MSS service would not promote the objectives of the Budget Act's auction provisions²⁸, which include development and rapid deployment of new technologies, products and services for the benefit of the public...without administrative or judicial delays," the promotion of "economic opportunity and competition and ensuring that new and innovative technologies are readily accessible to the American public by avoiding excessive concentration of licenses," the "avoidance of unjust enrichment through the methods employed to award uses of [the spectrum] resource," and the "efficient and intensive use of the electromagnetic spectrum."²⁹

The Commission recently moved forward to enable the licensing and implementation of global non-geostationary satellite service by LQP and others

²⁶See, Big LEO Rules Order at para 4.

²⁷ See 50 MHz NPRM, at para. 23 and footnote 33.

²⁸ Omnibus Budget Reconciliation Act of 1993, Pub. L. 103-66, Title VI, 107 Stat. 312, 387-97 (Aug. 10, 1993).

²⁹ Supra., at Section 309(j)(3).

through the use of procedures that did not include an auction.³⁰ The Commission adopted a spectrum sharing plan, strict financial qualifications and coverage and service requirements which would provide the greatest assurance that the public interest is furthered through prompt implementation of worldwide service by qualified applicants.³¹ Similarly, when additional spectrum is made available for use by non-GSO MSS systems, LQP believes that appropriate mechanisms other than competitive bidding would enable the furtherance of the public interest.

VIII. Conclusion

For the foregoing reasons, LQP urges the Commission to allocate the 2402-2417 MHz for non-GSO MSS in the space-to-Earth direction, 2390-2400 MHz for non-GSO MSS in the Earth-to-space direction, and 4660-4685 MHz to FSS to be used for non-GSO MSS feeder links in the Earth-to-space direction.

³⁰ See, Big LEO Rules Order at para. 41.

³¹ Supra., at para. 44, 30-42, and 23, respectively.

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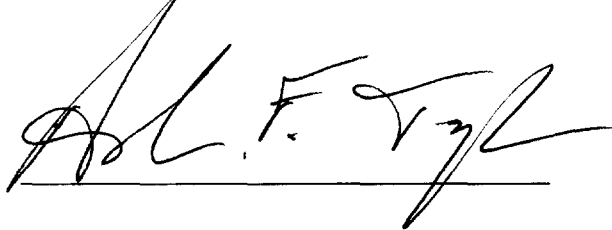
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A handwritten signature in black ink, appearing to read "A. F. Taylor", is written over a horizontal line.

Andrew F. Taylor